

Abstract Submitted  
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**Built-up of reactive oxygen species concentrations in a Micro-scaled Atmospheric Pressure Plasma Jet** VOLKER SCHULZ-VON DER GATHEN, HENDRIK BAHRE, DANIEL SCHRÖDER, NIKOLAS KNAKE, Institute for Experimental Physics II, Ruhr-Universität Bochum — Reactive oxygen species (ROS) such as atomic oxygen or ozone are detected in the post discharge effluent of a micro-scaled Atmospheric Pressure Plasma Jet ( $\mu$ APPJ) operated with a helium/ oxygen gas flow. These species are supposed to be of major importance for bio-medical tissue treatment and for surface modifications. Models and numerical simulations proposed to understand the plasma-chemical processes still have to be cross-checked. We report on measurements of the spatial distribution and its development of ROS from the gas inlet to the free effluent of the discharge. Investigations were carried under variation of gas mixture, gas velocity and applied power. Atomic oxygen was determined by means of two-photon laser induced fluorescence spectroscopy; Ozone has been investigated by UV absorption spectroscopy. For both species densities built up to several  $10^{15} \text{ cm}^{-3}$  typically within the discharge's first few millimetres corresponding to a reaction time of  $\sim 50 \mu\text{s}$  varying with the operation parameters. Experiments have been carried out in the frame of the DFG research group FOR1123 "Physics of Microplasmas."

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